

What is claimed is:

1. An X-ray converter screen, comprising:  
a substrate for converting impinging X-ray radiation to visible light, each point impinged on said substrate by X-ray radiation scintillating visible light emissions diverging from said substrate; and  
an emission modification layer comprising micro-spheres having an optical index through which the visible light emitted from said substrate is transmitted, said emission modification layer generally limiting the diverging visible light to a restricted cone of illumination propagating outwardly from each point impinged on said substrate by the X-ray radiation.
2. An X-ray converter screen as recited in claim 1, wherein said emission modification layer enhances light collection from the visible light converted by said substrate to improve the optical collection efficiency.
3. An X-ray converter screen as recited in claim 1, wherein said emission modification layer comprises a layer of said micro-spheres supported with a binder layer affixed to said substrate.
4. An X-ray converter screen as recited in claim 3, wherein said emission modification layer is sprayed on said substrate.
5. An X-ray converter screen as recited in claim 3, wherein said substrate comprises a phosphor screen made out of deposited crystals of a salt that gives off visible light when impinged upon by X-rays.

6. An X-ray converter screen as recited in claim 3, wherein said emission modification layer comprises a transmissive film for refracting the visible light propagating therethrough.

7. A radiographic system, comprising:  
an X-ray converter screen for converting impinging X-ray radiation to visible light, each point impinged on said screen by X-ray radiation scintillating visible light emissions diverging from said screen;  
5 an image sensor configured to sense the visible light from said screen;  
a first lens operable with said image sensor for spatially sensing the visible light within a collection  
10 cone directed outwardly from said image sensor; and  
a second lens through which the visible light emitted from said screen is transmitted, said second lens comprises micro-spheres of an optical index for concentrating the visible light supported with a binder  
15 layer being positioned in an optical path between said first lens and said screen for generally focusing the diverging visible light as a restricted cone of illumination propagating outwardly from each point impinged on said screen to increase the fraction of light  
20 directed into the collection cone of said first lens and reducing the amount of scattered visible light from said screen.

8. A system as recited in claim 7, wherein said second lens comprises a sprayed layer of said micro-spheres for refracting the visible light propagating therethrough.

9. A system as recited in claim 8, wherein said sprayed layer comprises a transmissive film surface structure having a multiplicity of micro-spheres for focusing the visible light emitted from said screen.

10. A method of converting X-ray radiation to visible light, comprising the steps of:

5 providing a phosphor screen for converting impinging X-ray radiation to visible light, each point impinged on the phosphor screen by X-ray radiation scintillating visible light emissions diverging from the phosphor screen; and

10 superposing the phosphor screen with a sprayed layer of micro-spheres for modifying the transmission of visible light emitted from the phosphor screen to generally limit the diverging visible light to a restricted cone of illumination propagating outwardly from each point impinged on the phosphor screen by the X-ray radiation.

11. A method as recited in claim 10, wherein said superposing step comprises the step of spraying on a brightness enhancement transmissive film.

12. A method as recited in claim 10, comprising the step of vacuum sealing the phosphor screen with the transmissive film.

13. A method as recited in claim 10, comprising the step of providing an optical gap between the phosphor screen and the transmissive film.